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18ME744

Seventh Semester B.E. Degree Examination, July/August 2022
Mechatronics

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Explain the major three elementary in measurement system of Mechatronics, with block diagram. **(10 Marks)**
   b. Explain with a neat sketch, basic elements of a closed-loop system. **(10 Marks)**

OR

2 a. Define sensor and transducer. Write the classification of transducer. **(10 Marks)**
   b. Explain LVDT with a neat sketch. List the advantages of LVDT. **(10 Marks)**

Module-2

3 a. With the help of block diagram, explain single channel and multi channel Data Acquistion System (DAQS). **(10 Marks)**
   b. Explain in detail Supervisory Control And Data Acquisition (SCADA). **(10 Marks)**

OR

4 a. Briefly explain the terms used in specification of stepper motor. **(08 Marks)**
   b. Explain the types of Brush-type d.c. motors with field coils with neat sketch. **(12 Marks)**

Module-3

5 a. Define Microprocessor. With the help of block diagram, explain microprocessor based control system. **(12 Marks)**
   b. List the difference between microprocessor and microcontroller. **(08 Marks)**

OR

6 a. With a neat sketch, explain 8085A microprocessor architecture. **(10 Marks)**
   b. Explain the following:
      i)   Fetch cycle
      ii) Types of buses
      iii) Flag registers
      iv) Program counter
      v)   Write cycle. **(10 Marks)**

Module-4

7 a. Sketch and explain basic structure of Programmable Logic Controller (PLC). **(10 Marks)**
   b. Briefly explain the factors should be considered for the selection of a PLC. **(10 Marks)**

OR

8 a. Explain the control of two pneumatic Pistons, with neat sketch. **(10 Marks)**
   b. Explain the control of conveyor motor, with neat sketch. **(10 Marks)**

Module-5

9   a.   Explain friction guideways and antifriction guideways.   (10 Marks)
    b   Briefly explain the properties of bearing materials.   (10 Marks)

OR

10 a.   Explain the mechatronics design process, with neat sketch.   (10 Marks)
    b.   With the help of mechatronic system, explain automatic car park system with sketch.
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